

## **Release of Bridged-Race 2000 and 2001 Population Estimates for Calculating Vital Rates**

The National Center for Health Statistics announces the release of bridged resident population estimates for 2000 and 2001 that are based on the Census 2000 counts. These estimates result from bridging the 31 race categories used in Census 2000, as specified in the 1997 Office of Management and Budget standards for the collection of data on race and ethnicity, to the four race categories specified under the 1977 standards. Many data systems, such as vital statistics, are continuing to use the 1977 standards during the transition to full implementation of the 1997 standards. The bridged estimates were produced under a collaborative arrangement with the U. S. Census Bureau. Three data files are provided. One file contains bridged April 1, 2000, population counts for the four race groups (White, Black or African American, American Indian or Alaska Native, Asian or Pacific Islander) by county, single year of age (0, 1, 2,..., 85 years and over), sex, and Hispanic origin (not Hispanic or Latino, Hispanic or Latino). The other two data files contain bridged postcensal estimates of the July 1, 2000 and July 1, 2001 resident populations of the United States for the four race groups (White, Black or African American, American Indian or Alaska Native, Asian or Pacific Islander) by single year of age (0, 1, 2, ..., 85 years and over), sex, and Hispanic origin (not Hispanic or Latino, Hispanic or Latino). State- and county-level estimates for July 1, 2000 and July 1, 2001 will be released in the future. Tables showing bridged and enumerated population

counts for 2000 and the 1990-based July 1, 2000 population estimates previously used by NCHS to calculate vital rates are provided (tables 1-5).

Background: In 1997, the Office of Management and Budget (OMB) issued “Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity,” which supercedes the 1977 Statistical Policy Directive 15, “Race and Ethnic Standards for Federal Statistics and Administrative Reporting” (1,2). Both documents specify rules for the collection, tabulation, and presentation of race and ethnicity data within the Federal statistical system. The 1977 standards required Federal agencies to report race-specific tabulations using four single-race categories, namely, White, Black, American Indian or Alaska Native, and Asian or Pacific Islander. The 1997 revision incorporated two major changes designed to reflect the changing racial and ethnic profile of the United States. First, the 1997 revision increased from four to five the minimum set of categories to be used by Federal agencies for identification of race. As in the past, these categories represent a social-political construct and are not anthropologically or biologically based. The five categories for race specified in the 1997 standards are: American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; and White. Second, the revised standards add the requirement that Federal data collection programs allow respondents to select one or more race groups when responding to a query on their racial identity. This provision means that there are potentially 31 race groups, depending on whether an individual selects one, two, three, four, or all five of the

race groups. Collection of additional detail on race or ethnicity is permitted so long as the additional categories can be aggregated into the minimum categories.

During the transition to full implementation of the 1997 standards, two different standards for the collection of race and ethnicity data are being used, creating incomparability across data systems. Further, within a given data system, the change in the race standards results in incomparability across time, thus making it difficult to perform trend analyses. The OMB recognized that approaches to make data collected under the 1997 standards comparable to data collected under the 1977 standards would be needed. Therefore, the OMB issued “Provisional Guidance on the Implementation of the 1997 Standards for Federal Data on Race and Ethnicity” (3). The guidance document contains a detailed discussion of bridging methods.

Methodology: Bridging methods are sets of rules or statistical models that take responses to the new questions on race and classify those responses as closely as possible to the responses that hypothetically would have been given using the old single-race categories. The bridging methods assume that single-race responses are likely to be the same under both standards and, therefore, focus on classifying responses that identify more than one race group.

Vital rates are based on information obtained from vital records collected through the state-based Vital Statistics Cooperative Program (numerators) and population estimates based on the U.S. Census (denominators). The 2000

decennial census collected race and ethnicity data in accordance with the 1997 standard. However, the revised race standards will not be reflected in the standard birth and death certificates until 2003 or later. Thus, beginning with the 2000 data year, the numerators and denominators for vital rates have incompatible race data. Previously released rates for 2000 and 2001 utilized 1990-based postcensal series of estimates of the resident population for denominators. Estimates for 2002 and beyond will not be available from this system, so it is necessary to develop a bridging method so that race-specific vital rates can be calculated. It is also important to use the more accurate counts available from the 2000 Census.

The methodology selected by the National Center for Health Statistics bridges the population counts under the two data collection standards, i.e., the multiple-race groups in the denominators are bridged to single-race categories. Information from the 1997-2000 National Health Interview Survey was used to develop the bridging methodology (4-7). The NHIS is the nation's primary source of general health information for the resident civilian noninstitutionalized population. The NHIS is an annual survey sponsored by NCHS and conducted by the U.S. Bureau of the Census. The NHIS is based on a stratified multistage probability design (8). Data are reported for households, families, and persons. Each year about 40,000 households are sampled, with about 100,000 persons. The NHIS provides a unique opportunity to investigate multiple-race groups because since 1982, the NHIS has allowed respondents to choose more than one race but has also asked respondents reporting multiple races to choose a

“primary” race. The respondent is first handed a card with numbered race categories, and the interviewer asks: “What is the number of the group or groups that represent your race?” If a respondent selects more than one category, the interviewer asks a follow-up question: “Which of these groups would you say best represents your race?” Consistently, since 1982, approximately 2% of the NHIS respondents have reported more than one race (9). Obtaining race data using this procedure is assumed to be close to having obtained race data using the 1977 single-race standards. About 80 percent of the multiple-race respondents report a primary race when responding to the follow-up question.

Regression models relating person-level and county-level covariates to the selection of a particular primary race by members of the multiple-race groups corresponding to the four race categories used under the 1977 standards were fitted to four years of NHIS data (1997-2000). The use of such regression models for bridging race was suggested by Schenker and Parker (10). For each county, single year of age, sex, Hispanic origin group, and multiple-race group, the estimated regression coefficients were used to generate the probability of selecting each primary race that is possible for the multiple-race group. For example, two probabilities were generated for the American Indian or Alaska Native/White group (by county, single year of age, sex, and Hispanic origin group): the probability of selecting American Indian or Alaska Native as the primary race and the complement, the probability of selecting White as the primary race. The probabilities for persons 69 years of age were assigned to

persons 70 years and over, because the number of NHIS respondents at these older ages was small and not well distributed across the multiple-race groups.

The probabilities generated from the fitted regression models are referred to as the NHIS bridging proportions. The Census Bureau applied the NHIS bridging proportions generated by NCHS to the Census 2000 Modified Race Data Summary file (with the Asian and Native Hawaiian or Other Pacific Islander groups combined) (11, 12). For each county, single year of age, sex, and Hispanic origin group, the count in each multiple-race group was divided among the possible single-race categories according to the bridging proportions. The resulting single-race counts were then added to the corresponding counts of people who had only reported a single race in the 2000 census. Finally, the Census Bureau rounded the combined single-race counts so that the total of the four bridged race counts within each county, age, sex, and Hispanic origin group would be consistent with the totals from Census 2000. This application resulted in a bridged population count for each of the four single-race groups (White, Black or African American, American Indian or Alaska Native, and Asian or Pacific Islander) by county, single year of age, sex, and Hispanic origin group, for April 1, 2000.

Postcensal population estimates are estimates made for the years following a census, before the next census has been taken. The Census Bureau has produced a postcensal series of estimates of the July 1 resident population of the United States by race (31 groups), age, sex, and Hispanic origin. To date, the series includes the years 2000 and 2001; as noted earlier, these data are

currently available only at the national level. Using the NHIS bridging proportions, the 31-race postcensal population estimates were bridged to the four single-race categories: White, Black or African American, American Indian or Alaska Native, and Asian or Pacific Islander.

Release of estimates: The bridged single-race population counts will be used to calculate birth and death rates produced by NCHS for data year 2000 and later years. Published reports that used the 1990-based postcensal population estimates are being re-issued in whole or in part (13,14). The bridged counts developed for April 1, 2000 and the bridged July 1 postcensal population estimates may be updated as additional data become available for use in the bridging process. In response to the increasing need for bridged estimates by a wide range of users, NCHS is making the bridged population estimates available in the accompanying data files and file documentation. The file layouts for the 1) April 1, 2000 bridged-race population estimates; 2) July 1, 2000 bridged-race postcensal estimates; and 3) July 1, 2001 bridged-race postcensal estimates are provided below. Tables showing bridged and enumerated population counts for 2000 and the 1990-based July 1, 2000 population estimates previously used by NCHS to calculate vital rates are provided (tables 1-5).

A report detailing the bridging methodology and evaluating the bridged population estimates is forthcoming, as is an evaluation of the bridging method (15,16).

Although efforts were made to use the best available data and methods to produce these estimates, the modeling process introduces error into the estimates. The potential for error will be greatest for the smallest population groups, particularly the smaller race groups and county level estimates. NCHS would appreciate receiving feedback on the usefulness of the estimates as well as any problems that have been identified. Please provide comments via e-mail to: [PopEst@cdc.gov](mailto:PopEst@cdc.gov).

### References

1. Office of Management and Budget. Revisions to the standards for the classification of Federal data on race and ethnicity. Federal Register 62FR58781-58790, October 30, 1997.  
<http://www.Whitehouse.gov/wh/eop/omb/html/fedreg.html>.
2. Office of Management and Budget. Race and ethnic standards for Federal statistics and administrative reporting. Statistical Policy Directive 15, 1977.
3. Office of Management and Budget. Provisional guidance on the implementation of the 1997 standards for the collection of Federal data on race and ethnicity. December 15, 2000.  
[http://www.Whitehouse.gov/omb/infoereg/r&e\\_guidance2000update.pdf](http://www.Whitehouse.gov/omb/infoereg/r&e_guidance2000update.pdf).
4. National Center for Health Statistics. 1997 NHIS survey questionnaires, flashcards, field representative manual.  
[ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Survey\\_Questionnaires/NHIS/1997/](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/1997/).
5. National Center for Health Statistics. 1998 NHIS survey questionnaires, flash cards, field representative manual, survey flowchart.  
[ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Survey\\_Questionnaires/NHIS/1998/](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/1998/).
6. National Center for Health Statistics. 1999 NHIS survey questionnaires, flash cards, field representative manual, survey flowchart.  
[ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Survey\\_Questionnaires/NHIS/1999/](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/1999/).
7. National Center for Health Statistics. 2000 NHIS Survey questionnaires, flash cards, field representative manual, survey flowchart.  
[ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Survey\\_Questionnaires/NHIS/2000/](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/2000/).

8. Botman SL, Moore TF, Moriarity CL, and Parsons VL. Design and estimation for the National Health Interview Survey, 1995-2004. National Center for Health Statistics. Vital Health Stat 2(130), 2000.
9. Sondik EJ, Lucas JW, Madans JH, Smith SS. Race/ethnicity and the 2000 census: implications for public health. Am J Public Health 2000; 11:1709-13.
10. Schenker N, Parker, JD. From single-race reporting to multiple-race reporting: using imputation methods to bridge the transition. Stat Med, forthcoming.
11. Census 2000 Modified Race Data [MR(31)-CO.txt], prepared by the U.S. Census Bureau, 2002.
12. U.S. Census Bureau. Age, sex, race, and Hispanic origin information from the 1990 census: A comparison of census results with results where age and race have been modified. 1990 CPH-L-74. Washington: U.S. Department of Commerce. 1991.
13. Ventura SJ, Hamilton BE, Sutton PD. Revised birth and fertility rates for the United States, 2000 and 2001. National Vital Statistics Reports; Vol 51. Forthcoming, 2003.
14. Arias E, Smith BL. Deaths: Preliminary data for 2001. National Vital Statistics Reports; Vol 51. Forthcoming, 2003.
15. Ingram DD, Weed JA, Parker,JD, Hamilton B, Schenker N, Arias E, Madans JH. U.S. Census 2000 with bridged race categories. Vital and Health Statistics. Series 2. Forthcoming 2003.
16. ParkerJD, Schenker N, Ingram DD, Weed JA, Heck KE, Madans JH. Bridging between two standards for collecting information on race and ethnicity: application to Census 2000and vital rates. Submitted for publication.